

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application

Inventor(s): Michel Luc Cote and Christophe Pierrat
Appl. No.: 10/085,759
Confirm. No.: 1994
Filed: 28 February 2002
Title: Design and Layout of Phase Shifting Photolithographic Masks

#2
Art Unit: 1752
Examiner: *Unassigned*

Customer No. 30437

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.56

Commissioner of Patents
Washington, DC 20231

Sir:

It is requested that the information identified in this statement be considered by the Examiner and made of record in the above-identified application. This statement is not intended to represent that a search has been made or that the information cited in the statement is, or is considered to be, material to patentability as defined in 37 C.F.R. §1.56. If this is a continuation, divisional or continuation-in-part application, it is understood that the Examiner will consider all information which was considered by the Office in a parent application. MPEP §609. Such information therefore is not listed herein unless it is desired that the information be printed on a patent issuing from the subject application.

Enclosed with this statement are the following:

- Form PTO-1449. The Examiner is requested to initial the form and return it to the undersigned in accordance with M.P.E.P. §609.
- A copy of each cited document as required by 37 C.F.R. §1.98. Copies are not submitted of documents previously submitted by the applicant in a parent application from which benefit under 35 U.S.C. §120 is claimed, 37 C.F.R. §1.98(d)(1), with an information disclosure statement submitted in the parent application which complies with the Sept. 8, 2000 or subsequent revision of 37 C.F.R. §1.98(a-c). If any of the cited/submitted documents is in a foreign language, a concise explanation of relevance is provided pursuant to 37 C.F.R. §1.98(a)(3)(i). For foreign language documents cited in a search report by a foreign patent office, the requirement for a concise explanation of relevance is satisfied by the submission herewith of an English language version of the search report. MPEP §609A(3). If a written English-language translation of a non-English language document, or portion thereof, is within the possession, custody or control of, or is readily available to any individual designated in §1.56(c), a copy of the translation accompanies this statement, 37 C.F.R. §1.98(a)(3)(ii), and satisfies the requirement for a concise explanation of relevance, MPEP §609A(3).

RECEIVED
TECHNOLOGY CENTER 1700
FEB 12 2003

— **PTA Statement under 37 C.F.R. §704(d).** Each item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart application and that this communication was not received by any individual designated in §1.56(c) more than thirty days prior to the filing of the information disclosure statement.

This statement should be considered because:

37 C.F.R. §1.97(b). This statement qualifies under 37 C.F.R. §1.97, subsection (b) because:

- (1) It is being filed within three months of the filing date of an application other than a continued prosecution application under § 1.53(d);
-- OR --
- (2) It is being filed within 3 months of entry of a national stage;
-- OR --
- (3) It is being filed before the mailing date of the first Office Action on the merits,
-- OR --
- (4) It is being filed before the mailing date of the first Office Action after the filing of a Request for Continued Examination under 37 C.F.R. §1.114.

— **37 C.F.R. §1.97(c).** Although it may not qualify under subsection (b), this statement qualifies under 37 C.F.R. §1.97, subsection (c) because:

- (1) It is being filed before the mailing date of a FINAL office action, a Notice of Allowance, or an action that otherwise closes prosecution in the subject application, whichever occurs first.

— -- AND (*check at least one of the following*) --

- (1) It is accompanied by a STATEMENT as set forth in 37 C.F.R. §1.97(e).
-- OR --
- (2) It is accompanied by the \$180 fee set forth in 37 C.F.R. §1.17(p).

— **37 C.F.R. §1.97(d).** Although it may not qualify under subsection (b) or (c), this statement qualifies under 37 C.F.R. §1.97, subsection (d) because:

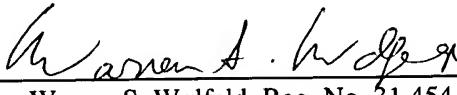
- (1) It is being filed on or before payment of the issue fee;
-- AND --
- (2) It is accompanied by a STATEMENT as set forth in 37 C.F.R. §1.97(e);
-- AND --
- (3) It is accompanied by the \$180 fee set forth in 37 C.F.R. §1.17(p).

Fee Authorization. The Commissioner is hereby authorized to charge underpayment of any additional fees or credit any overpayment associated with this communication to Deposit Account No. 50-0869. A duplicate copy of this authorization is enclosed.

Respectfully submitted,

HAYNES BEFFEL & WOLFELD LLP

Date: 31 July 2002

By: 
Warren S. Wolfeld, Reg. No. 31,454

NUMERICAL C/O:

HAYNES BEFFEL & WOLFELD LLP
P.O. Box 366
Half Moon Bay, CA 94019
Telephone: 650-712-0340
Facsimile: 650-712-0263

INFORMATION DISCLOSURE CITATION PTO-1449	Atty. Docket No.	Serial No.
	NMTI 1002-6	10/085,759
	Applicant	CÔTÉ, Michel Luc
	Filing Date	Group <u>1752</u> <u>Not Yet Assigned</u>
U.S. PATENT DOCUMENTS		

EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE
	5,302,477	4/12/1994	Dao, et al.	430	5	8/21/1992
	5,308,741	5/3/1994	Kemp	430	312	7/31/1992
	5,324,600	6/28/1994	Jinbo, et al.	430	5	7/7/1992
	5,364,716	11/15/1994	Nakagawa, et al.	430	5	9/3/1992
	5,472,814	12/5/1995	Lin	430	5	11/17/1994
	5,523,186	6/4/1996	Lin, et al.	430	5	12/16/1994
	5,527,645	6/18/1996	Pati, et al.	430	5	11/17/1994
	5,537,648	7/16/1996	Liebmann, et al.	395	500	8/15/1994
	5,538,815	7/23/1996	Oi, et al.	430	5	9/14/1993
	5,565,286	10/15/1996	Lin	430	5	11/17/1994
	5,573,890	11/12/1996	Spence	430	311	7/18/1994
	5,595,843	1/21/1997	Dao	430	5	3/30/1995
	5,620,816	4/15/1997	Dao	430	5	10/13/1995
	5,635,316	6/3/1997	Dao	430	5	10/13/1995
	5,636,131	6/3/1997	Liebmann, et al.	364	490	5/12/1995
	5,702,848	12/30/1997	Spence	430	5	8/23/1996
	5,761,075	6/2/1998	Oi, et al.	364	488	5/31/1996
	5,766,804	6/16/1998	Spence	430	5	8/23/1996
	5,766,806	6/16/1998	Spence	430	5	9/9/1996
	5,807,649	9/15/1998	Liebmann, et al.	430	5	10/31/1996
	5,858,580	1/12/1999	Wang, et al.	430	5	9/17/1997
	5,923,562	7/13/1999	Liebmann, et al.	364	488	10/18/1996
	5,923,566	6/13/1999	Galan, et al.	364	489	3/25/1997

EXAMINER: _____

Date Considered: _____

 TECHNOLOGY CENTER 1700
ED
02

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP § 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE CITATION PTO-1449	Atty. Docket No.	Serial No.
	NMTI 1002-6	10/085,759
	Applicant	CÔTÉ, Michel Luc
	Filing Date	Group 1752 2/28/2002 Not Yet Assigned

U.S. PATENT DOCUMENTS

EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE
	5,994,002	11/30/1999	Matsuoka	430	5	9/4/1997
	5,998,068	12/7/1999	Matsuoka	430	5	1/27/1998
	6,057,063	5/2/2000	Liebmann, et al.	430	5	4/14/1997
	6,066,180	5/23/2000	Kim, et al.	716	19	3/15/1999
	6,083,275	7/4/2000	Heng, et al.	716	19	1/9/1998
	6,130,012	10/10/2000	May, et al.	430	5	1/13/1999
	6,139,994	10/31/2000	Broeke, et al.	430	5	6/25/1999
	6,185,727 B1	2/6/2001	Liebmann	716	19	12/12/1995
	6,228,539 B1	5/8/2001	Wang, et al.	430	5	1/12/1999
	6,251,549 B1	6/26/2001	Levenson	430	11	10/28/1999
	6,258,493 B1	7/10/2001	Wang, et al.	430	5	7/17/2000
	6,335,128 B1	1/1/2002	Cobb, et al.	430	5	9/28/1999
	6,338,922 B1	1/15/2002	Liebmann, et al.	430	5	5/8/2000
	2001/0000240 A1	4/12/2001	Wang, et al.	430	5	12/7/2000
	2001/0028985 A1	10/11/2001	Wang, et al.	430	5	4/20/2001

RECEIVED
 FEB 3 2007
 TECHNOLOGY CENTER 1700

EXAMINER: _____

Date Considered: _____

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP § 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE CITATION PTO-1449	Atty. Docket No.	Serial No.
	NMTI 1002-6	10/085,759
	Applicant	CÔTÉ, Michel Luc
	Filing Date	Group 2/28/2002 1752 Not Yet Assigned

FOREIGN PATENT DOCUMENTS

EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
	JP 6-67403	3/11/1994	JP			<input checked="" type="checkbox"/>	<input type="checkbox"/>
	WO 01/23961 A1	4/5/2001	WO			<input type="checkbox"/>	<input type="checkbox"/>
	JP 1,283,925	2/14/1991	JP			<input checked="" type="checkbox"/>	<input type="checkbox"/>
	WO 02/03140 A1	1/10/2002	WO			<input type="checkbox"/>	<input type="checkbox"/>
	JP 2-140743	5/30/1990	JP			<input checked="" type="checkbox"/>	<input type="checkbox"/>
	GB 2,333,613 A	7/28/1999	GB			<input type="checkbox"/>	<input type="checkbox"/>
	JP 2,638,561	4/25/1997	JP			<input type="checkbox"/>	<input type="checkbox"/>
	JP 2,650,962	5/16/1997	JP			<input type="checkbox"/>	<input type="checkbox"/>
	EP 0 653 679 A2	5/17/1995	EP			<input type="checkbox"/>	<input type="checkbox"/>
	JP 8,051,068	2/20/1996	JP			<input checked="" type="checkbox"/>	<input type="checkbox"/>
	JP 8-236317	9/6/1996	JP			<input checked="" type="checkbox"/>	<input type="checkbox"/>
	JP 10-133356	5/22/1998	JP			<input type="checkbox"/>	<input type="checkbox"/>
	JP 11-143085	5/28/1999	JP			<input type="checkbox"/>	<input type="checkbox"/>
	JP 62067547	3/27/1987	JP			<input type="checkbox"/>	<input type="checkbox"/>
	WO 98/12605 A1	3/26/1998	WO			<input type="checkbox"/>	<input type="checkbox"/>
	DE 195 45 163 A1	6/5/1996	DE			<input type="checkbox"/>	<input type="checkbox"/>

RECEIVED
MAY 31 2002
TECHNOLOGY CENTER 1750

EXAMINER: _____

Date Considered: _____

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP § 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE CITATION PTO-1449	Atty. Docket No. NMTI 1002-6	Serial No. 10/085,759
	Applicant CÔTÉ, Michel Luc	
	Filing Date 2/28/2002	Group <u>1752</u> <u>Not Yet Assigned</u>

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER'S INITIALS	CITATION
	Ackmann, P., et al., "Phase Shifting and Optical Proximity Corrections to Improve CD Control on Logic Devices in Manufacturing for Sub 0.35 um I-Line", SPIE, Vol. 3051, pp. 146-153, March 12-14, 1997.
	Matsuoka, K., et al., "Application of Alternating Phase-Shifting Mask to 0.16um CMOS Logic Gate Patterns", Matsushita Electric Ind. Co., Ltd. (9 pages).
	Wang, R., et al., "Polarized Phase Shift Mask: Concept, Design, and Potential Advantages to Photolithography Process and Physical Design", Motorola Semiconductor Product Sector (12 pages).
	Ogawa, K., et al., "Phase Defect Inspection by Differential Interference", Lasertec Corporation (12 pages).
	Pistor, T., "Rigorous 3D Simulation of Phase Defects in Alternating Phase-Shifting Masks", Panoramic Technology Inc. (13 pages).
	Semmler, A., et al., "Application of 3D EMF Simulation for Development and Optimization of Alternating Phase Shifting Masks", Infineon Technologies AG (12 pages).
	Wong, A., et al., "Polarization Effects in Mask Transmission", University of California Berkeley (8 pages).
	Erdmann, A., "Topography Effects and Wave Aberrations in Advanced PSM-Technology", Fraunhofer Institute of Integrated Circuits (11 pages).
	Granik, Y., et al., "CD Variation Analysis Technique and its Application to the Study of PSM Mask Misalignment", Mentor Graphics (9 pages).
	Hanyu, et al., "New Phase-Shifting Mask with Highly Transparent SiO ₂ Phase Shifters", Fujitsu Laboratories Ltd. (11 pages).
	Ishiwata, N., et al., "Fabrication of Phase-Shifting Mask", Fujitsu Limited (11 pages).
	Levenson, M., et al., "Phase Phirst! An Improved Strong-PSM Paradigm", M.D. Levenson Consulting, Petersen Advanced Lithography, KLA-Tencor (10 pages).
	Levenson, M., et al., "SCAA Mask Exposures and Phase Phirst Design for 110nm and Below", M.D. Levenson Consulting, Canon USA, Inc., JSR Microelectronics, Inc. (10 pages).
	Lin, B.J., "The Relative Importance of the Building Blocks for 193nm Optical Lithography", Linnovation, Inc. (12 pages).

EXAMINER: _____

Date Considered: _____

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP § 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

NTI Use Only: 747 CON4; 139.1

TECHNOLOGY CENTER 1700

JULY 2002

RECEIVED

INFORMATION DISCLOSURE CITATION PTO-1449	Atty. Docket No.	Serial No.
	NMTI 1002-6	10/085,759
	Applicant	CÔTÉ, Michel Luc
	Filing Date	Group 1752 2/28/2002 Not Yet Assigned

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER'S INITIALS	CITATION
	McCallum, M., et al., "Alternating PSM Mask Performance - a Study of Multiple Fabrication Technique Results", International SEMATECH (6 pages).
	Morikawa, Y., et al., "100nm-alt.PSM Structure Discussion for ArF Lithography", Dai-Nippon Printing Co., Ltd. (15 pages).
	Ozaki, T., et al., "A 0.15um KrF Lithography for 1Gb DRAM Product Using Highly Printable Patterns and Thin Resist Process", Toshiba Corporation (2 pages).
	Rhyins, P., et al., "Characterization of Quartz Etched PSM Masks for KrF Lithography at the 100nm Node", Photronics, Inc., MIT Lincoln Lab, ARCH Chemicals, Finle Technologies, KLA-Tencor Corp. (10 pages).
	Rosenbluth, A., et al., "Optimum Mask and Source Patterns to Print a Given Shape", IBM (17 pages).
	Schmidt, R., et al., "Impact of Coma on CD Control for Multiphase PSM Designs", AMD, ASML (10 pages).
	Sewell, H., et al., "An Evaluation of the Dual Exposure Technique", SVG Lithography Systems Inc. (11 pages).
	Spence, C., et al., "Optimization of Phase-Shift Mask Designs Including Defocus Effects", AMD, Princeton University, Vecor Technologies Inc. (8 pages).
	Suzuki, A., et al., "Multilevel Imaging System Realizing k1=-.3 Lithogrpahy", Canon Inc. (13 pages).
	Vandenberghe, G., et al., "(Sub-)100nm Gate Patterning Using 248nm Alternating PSM", IMEC, Mentor Graphics (9 pages).
	Fritze, M., et al., "100-nm Node Lithography with KrF?", MIT Lincoln Lab, Numerical Technologies, Photronics, Arch Chemicals (14 pages).
	Fukuda, H., et al., "Patterning of Random Interconnect Using Double Exposure of Strong-Type PSMs", Hitachi Central Research Lab (8 pages).
	Ferguson, R., et al., "Pattern-Dependent Correction of Mask Topography Effects for Alternating Phase-Shifting Masks", IBM Microelectronics, University of California Berkeley (12 pages).
	Toublan, O., et al., "Phase and Transmission Errors Aware OPC Solution for PSM: Feasibility Demonstration", Mentor Graphics Corp. (7 pages).

EXAMINER: _____

Date Considered: _____

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP § 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

RECEIVED
JUL 31 2002
TECHNOLOGY CENTER 1700

INFORMATION DISCLOSURE CITATION PTO-1449	Atty. Docket No. NMTI 1002-6	Serial No. 10/085,759
	Applicant CÔTÉ, Michel Luc	
	Filing Date 2/28/2002	Group <u>1752</u> Not Yet Assigned

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER'S INITIALS	CITATION
	Yanagishita, Y., et al., "Phase-Shifting Photolithography Applicable to Real IC Patterns", Fujitsu Limited (11 pages).
	Levenson, M., et al., "Improving Resolution in Photolithography with a Phase-Shifting Mask", IEEE, Transactions On Electron Devices, Vol. ED-29, No. 12, pp. 1828-1836, December 1982.
	Levenson, M., et al., "The Phase-Shifting Mask II: Imaging Simulations and Submicrometer Resist Exposures", IEEE Transactions on Electron Devices, Vol. ED-31, No. 6, pp. 753-763, June 1984.
	Terasawa, T., et al., "0.3-Micron Optical Lithography Using a Phase-Shifting Mask", SPIE, Optical/Laser Microlithography II, Vol. 1088, pp. 25-33, March 1989.
	Nitayama, A., et al., "New Phase Shifting Mask with Self-Aligned Phase Sifters for a Quarter Micron Photolithography", IEDM, pp. 3.3.1-3.3.4, December 3-6, 1989.
	Jinbo, H., et al., "0.2um or Less i-Line Lithography by Phase-Shifting-Mask Technology", IEEE, pp. 33.3.1-33.3.4 (1990).
	Neureuther, A., "Modeling Phase Shifting Masks", SPIE, 10th Annual Symposium On Microlithography, Vol. 1496, pp. 80-85 (1990).
	Yamanaka, T., et al., "A 5.9um ² Super Low Power SRAM Cell Using a New Phase-Shift Lithography", IEDM, pp. 18.3.1-18.3.4 (1990).
	Inokuchi, K., et al., "Sub-Quarter Micron Gate Fabrication Process Using Phase-Shifting-Mask for Microwave GaAs Devices", Extended Abstracts Of The 1991 Intl. Conference On Solid State Devices And Materials, Yokohama, Japan, pp. 92-94 (1991).
	Inokuchi, K., et al., "Sub-Quarter-Micron Gate Fabrication Process Using Phase-Shifting Mask for Microwave GaAs Devices", Japanese Journal Of Applied Physics, Vol. 30, No. 12B, pp. 3818-3821, December 1991.
	Jinbo, H., et al., "Improvement of Phase-Shifter Edge Line Mask Method", Japanese Journal Of Applied Physics, Vol. 30, No. 11B, pp. 2998-3003, November 1991.
	Kimura, T., et al., "Subhalf-Micron Gate GaAs Mesfet Process Using Phase-Shifting-Mask Technology", IEEE, GaAs IC Symposium, pp. 281-284 (1991).
	Wiley, J., et al., "Phase Shift Mask Pattern Accuracy Requirements and Inspection Technology", SPIE, Integrated Circuit Metrology, Inspection, And Process Control V, Vol. 1464, pp. 346-355 (1991).
	Hirai, Y., et al., "Automatic Pattern Generation System for Phase Shifting Mask", 1991 Symposium on VLSI Technology, Digest of Technical Papers, pp. 95-96, May 28-30, 1991.

EXAMINER: _____

Date Considered: _____

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP § 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE CITATION PTO-1449	Atty. Docket No.	Serial No.
	NMTI 1002-6	10/085,759
	Applicant	CÔTÉ, Michel Luc
	Filing Date	Group 1752 Not Yet Assigned

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER'S INITIALS	CITATION
	Wong, A., et al., "Investigating Phase-Shifting Mask Layout Issues Using a Cad Toolkit", IEEE, pp. 27.4.1-27.4.4 (1991).
	Terasawa, T., et al., "Imaging Characteristics of Multi-Phase-Shifting and Halftone Phase-Shifting Masks", Japanese Journal of Applied Physics, Vol. 30, No. 11B, pp. 2991-2997, November 1991.
	Burggraaf, P., "Four More Significant Japanese Advances in Phase Shifting Technology", Semiconductor International, p. 16, December 1991.
	Kemp, K., et al., "Optimized Phase Shift Mask Designs for Real Devices", KTI Microlithography Seminar, pp. 67-75, October 14-15, 1991.
	Newmark, D., et al., "Phase-Shifting Mask Design Tool", SPIE - 11th Annual BACUS Symposium on Photmask Technology, Vol. 1604, pp. 226-235, September 25-27, 1991.
	Nolscher, C., et al., "Investigation of Self-Aligned Phase-Shifting Reticles by Simulation Techniques", SPIE - Optical/Laser Microlithography IV, Vol. 1463, pp. 135-150 (1991).
	Inoue, S., et al., "Simulation Study on Phase-Shifting Masks for Isolated Patterns", Japanese Journal of Applied Physics, Vol. 30, No. 11B, pp. 3010-3015, November 1991.
	Watanabe, H., et al., "Detection and Printability of Shifter Defects in Phase-Shifting Masks", Japanese Journal of Applied Physics, Vol. 30, No. 11B, pp. 3016-3020, November 1991.
	Watanabe, H., et al., "Pattern Transfer Characteristics of Transparent Phase Shifting Mask", Japanese Journal of Applied Physics, Vol. 30, No. 11B, pp. 3004-3009, November 1991.
	Jinbo, H., et al., "Application of Blind Method to Phase-Shifting Lithography", IEEE, 1992 Symposium On VLSI Technology Digest Of Technical Papers, pp. 112-113 (1992).
	Watanabe, H., et al., "Detection and Printability of Shifter Defects in Phase-Shifting Masks II Defocus Characteristics", Jpn. J. Appl. Phys., Vol. 31, pp. 4155-4160 (1992).
	Pierrat, C., et al., "Phase-Shifting Mask Topography Effects on Lithographic Image Quality", IEEE, pp. 3.3.1-3.3.4 (1992).
	Burggraaf, P., "Lithography's Leading Edge, Part 1: Phase-Shift Technology and Part 2: I-Line and Beyond", Semiconductor International, pp. 43-47 and 52-56, February 1992.
	IBM, "Phase-Shift Mask Utilizing Silicon Oxy-Nitride as a Low Reflectivity Phase-Shift Layer", IBM Technical Disclosure Bulletin, Vol. 34, No. 10B, pp. 360-361, March 1992.

EXAMINER: _____

Date Considered: _____

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP § 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

NTI Use Only 4747CON4; 137; 4

RECEIVED
MARCH 1 2002
TECHNOLOGY CENTER 100

INFORMATION DISCLOSURE CITATION PTO-1449	Atty. Docket No. NMTI 1002-6	Serial No. 10/085,759
	Applicant CÔTÉ, Michel Luc	
	Filing Date 2/28/2002	Group <u>1752</u> Not Yet Assigned

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER'S INITIALS	CITATION
	Brunner, T., et al., "170nm Gates Fabricated by Phase-Shift Mask and Top Anti-Reflector Process", SPIE, Optical/Laser Microlithography VI, Vo. 1927, pp. 182-189 (1993).
	Lin, B.J., "Phase-Shifting Masks Gain an Edge", IEEE Circuits & Devices, pp. 28-35, March 1993.
	Moniwa, A., et al., "Algorithm for Phase-Shift Mask Design with Priority on Shifter Placement", Jpn. J. Appl. Phys., Vol. 32, Pt. 1, No. 12B, pp. 5874-5879, December 1993.
	Ooi, K., et al., "Computer Aided Design Software for Designing Phase-Shifting Masks", Jpn. J. Appl. Phys., Vol. 32, Pt. 1, No. 12B, pp. 5887-5891, December 1993.
	Ohtsuka, H., et al., "Evaluation of Repair Phase and Size Tolerance for a Phase-Shift Mask", J. Vac. Sci. Technol. B, Vol. 11, No. 6, pp. 2665-2668, November/December 1993.
	Ronse, K., et al., "Comparison of Various Phase Shift Strategies and Application to 0.35um ASIC Designs", SPIE - Optical/Laser Microlithography VI, Vol. 1927, pp. 2-16 (1993).
	Galan, G., et al., "Application of Alternating-Type Phase Shift Mask to Polysilicon Level for Random Logic Circuits", Jpn. J. Appl. Phys., Vol. 33, pp. 6779-6784 (1994).
	Mizuno, F., et al., "Practical Phase-Shifting Mask Technology for 0.3um Large Scale Integrations", J. Vac. Sci. Technol. B, Vol. 12, No. 6, pp. 3799-3803, November/December 1994.
	Pati, Y.C., et al., "Phase-Shifting Masks for Microlithography: Automated Design and Mask Requirements", J. Opt. Soc. Am., Vol. 11, No. 9, pp. 2438-2452, September 1994.
	Sturman, J., et al., "Wafer Proximity Correction and Its Impact on Mask-Making", Bacus News, Vol. 10, Issue 1, pp. 1, 3-7, 10-12, January 1994.
	Waas, T., et al., "Automatic Generation of Phase Shift Mask Layouts", Microelectronic Engineering, Vol. 23, pp. 139-142 (1994).
	Barouch, E., et al., "OPTIMASK: An OPC Algorithm for Chrome and Phase-Shift Mask Design", SPIE, Vo. 2440, pp. 192-206, February 1995.
	Moniwa, A., et al., "Heuristic Method for Phase-Conflict Minimization in Automatic Phase-Shift Mask Design", Jpn. J. Appl. Phys., Vol. 34, Pt. 1, No. 12B, pp. 6584-6589, December 1995.
	Langston, J., et al., "Extending Optical Lithography to 0.25um and Below", Solid State Technology, pp. 57-64, March 1995.

EXAMINER: _____

Date Considered: _____

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP § 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE CITATION PTO-1449	Atty. Docket No.	Serial No.
	NMTI 1002-6	10/085,759
	Applicant	CÔTÉ, Michel Luc
	Filing Date	Group 1752 Not Yet Assigned

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER'S INITIALS	CITATION
	Nagahiro, Y., "Improved Mask Technique for Photolithography Applied to 0.25um LSI - Improvement of Resolution, Pattern Correction, Exposure Area", Nikkei Microdevices, pp. 1-6, April 1995.
	Okamoto, Y., et al., "A New Phase Shifting Mask Technology for Quarter Micron Photolithography", SPIE, Vol. 2512, pp. 311-318 (1995).
	Pierrat, C., et al., "Required Optical Characteristics of Materials for Phase-Shifting Masks", Applied Optics, Vol. 34, No. 22, pp. 4923-4928, August 1, 1995.
	Galan, G., et al., "Alternating Phase Shift Generation for Complex Circuit Designs", SPIE, Vol. 2884, pp. 508-519, September 18-20, 1996.
	Kanai, H., et al., "Sub-Quarter Micron Lithography with the Dual-Trench Type Alternating PSM", SPIE, Vol. 2793, pp. 165-173 (1996).
	Ishiwata, N., et al., "Novel Alternating Phase Shift Mask with Improved Phase Accuracy", SPIE, Proceedings Of The 17th Annual Symposium On Photomask Technology And Management, Vol. 3236, pp. 243-249 (1997).
	Morimoto, H., et al., "Next Generation Mask Strategy - Technologies are Ready for Mass Production of 256MDRAM?", SPIE, Vol. 3236, pp. 188-189 (1997).
	Roman, B., et al., "Implications of Device Processing on Photomask CD Requirements", SPIE, Vol. 3236 (1997) (Abstract Only).
	Nakae, A., et al., "A Proposal for Pattern Layout Rule in Application of Alternating Phase Shift Mask", SPIE, Vol. 3096, pp. 362-374 (1997).
	Tsujimoto, E., et al., "Hierarchical Mask Data Design System (PROPHET) for Aerial Image Simulation, Automatic Phase-Shifter Placement, and Subpeak Overlap Checking", SPIE, Vol. 3096, pp. 163-172 (1997).
	Yamamoto, K., et al., "Hierarchical Processing of Levenson-Type Phase Shifter Generation", Jpn. J. Appl. Phys., Vol. 36, Part 1, No. 12B, pp. 7499-7503, December 1997.
	Gordon, R., et al., "Design and Analysis of Manufacturable Alternating Phase-Shifting Masks", Bacus News, Vol. 14, Issue 12, pp. 1-9, December 1998.
	Nara, M., et al., "Phase Controllability Improvement for Alternating Phase Shift Mask", Dai Nippon Printing Co., Ltd. (16 pages).
	Ohnuma, H., et al., "Lithography Computer Aided Design Technology for Embedded Memory in Logic", Jpn. J. Appl. Phys., Vol. 37, Part I, No. 12B, pp. 6686-6688, December 1998.

EXAMINER: _____

Date Considered: _____

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP § 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

RECEIVED
 CHAN CENTER
 1 2602
 1700

INFORMATION DISCLOSURE CITATION PTO-1449	Atty. Docket No.	Serial No.
	NMTI 1002-6	10/085,759
	Applicant	CÔTÉ, Michel Luc
	Filing Date	Group 1752 Not Yet Assigned

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER'S INITIALS	CITATION
	Fukuda, H., "Node-Connection/Quantum Phase-Shifting Mask: Path to Below 0.3um Pitch, Proximity Effect Free, Random Interconnects and Memory Patterning", J. Vac. Sci. Technol. B, Vol. 17, No. 6, pp. 3291-3295. November/December 1999.
	Spence, C., et al., "Integration of Optical Proximity Correction Strategies in Strong Phase Shifters Design for Poly-Gate Layers", Bacus News, Vol. 15, Issue 12, pp. 1, 4-13, December 1999.
	Kuo, C., et al., "Extension of Deep-Ultraviolet Lithography for Patterning Logic Gates Using Alternating Phase Shifting Masks", J. Vac. Sci. Technol. B, Vol. 17, No. 6, pp. 3296-3300, November/December 1999.
	Palmer, S., et al., "Dual Mask Model-Based Proximity Correction for High Performance 0.10um CMOS Process", The 44th International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication Abstracts, pp. 18-19, May 30-June 2, 2000
	Pierrat, C., "Investigation of Proximity Effects in Alternating Aperture Phase Shifting Masks", Numerical Technologies, Inc. (11 pages).
	Kikuchi, K., et al., "Method of Expanding Process Window for the Double Exposure Technique with alt-PSMs", Optical Microlithography XIII, Proceeding of SPIE, Vol. 4000, pp. 121-131 (2000).
	Cote, M., et al., "A Practical Application of Full-Feature Alternating Phase-Shifting Technology for a Phase-Aware Standard-Cell Design Flow", Numerical Technologies Inc. (6 pages).
	Heng, F., et al., "Application of Automated Design Migration to Alternating Phase Sift Mask Design", IBM Research Report RC 21978 (98769), February 26, 2001 (7 pages).
	Wong, A., et al., "Alternating Phase-Shifting Mask with Reduced Aberration Sensitivity: Lithography Considerations", Proc. SPIE, Vol. 4346, pp. 1-9 (2001).

RECEIVED
 MAR 31 2002
 TECHNOLOGY CENTER 1700

EXAMINER: _____

Date Considered: _____

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP § 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.